UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 4

Science and Ecosystem Support Division
980 College Station Road
Athens, Georgia 30605-2720

SITE: GE Rome
BREAK: 2.2 V.12
OTHER:

March 3, 2004

4-SESD-EAB

MEMORANDUM

SUBJECT: Coosa River Water Sampling Investigation Report, SESD Project No. 03-1068 and No. 04-0048

FROM: Laura McGrath, Environmental Engineer LCM
Ecological Evaluation Section
Ecological Assessment Branch
Science and Ecosystem Support Division

THRU: Bill Cosgrove, Chief William R Bokey for
Ecological Evaluation Section
Ecological Assessment Branch
Science and Ecosystem Support Division

TO: Jim Kutzman
Water Management Division

Attached is the report for the subject sampling investigation. If you have any questions, please phone me at (706) 355-8776.

Attachment

cc: Carol Monell, WMD
Wes Hardegree, WMD
Kay Wischkaemper, WMD
Jim Webster, WMD
Gail Mitchell, WMD
Bill Melville, WMD
Wilda Cobb, EAD
Nadine Orell, EAD
Bill Cosgrove, SESD, EAB
Bill Bokey, SESD, EAB


10411136

COOSA RIVER PCB WATER SAMPLING INVESTIGATION REPORT MARCH 2004 03-1068, 04-0048

U.S. EPA, Region 4
Science and Ecosystem Support Division
Ecological Assessment Branch
980 College Station Road
Athens, Georgia 30605

Table of Contents

List of Figures

List of Tables

List of Appendices

Distribution List

Jim Kutzman	Waste Management Division
Carol Monell	South Site Management Branch, Waste Management Division
Wes Hardegree	South Site Management Branch, Waste Management Division
Kay Wischkaemper	Office of Technical Services, Waste Management Division
Jim Webster	Emergency Response and Removal Branch, Waste Managment Division
Gail Mitchell	Standards, Monitoring, and TMDL Branch, Water Management Division
Bill Melville	West Standards, Monitoring, and TMDL Section, Water Management Division
Wilda Cobb	Environmental Accountability Division
Nadine Orell	Environmental Accountability Division
Bill Cosgrove	Ecological Assessment Branch, Science and Ecosystem Support Division
Bill Bokey	Ecological Assessment Branch, Science and Ecosystem Support Division

1.0 Introduction

The U.S. Environmental Protection Agency (EPA), Region 4, Waste Management Division (WD), South Site Management Branch, requested that the Region 4, Science and Ecosystem Support Division (SESD) collect water samples from the Coosa River near Rome, Georgia and three of its tributaries, Horseleg Creek, Little Dry Creek, and the South Branch of Little Dry Creek to determine if polychlorinated biphenlys (PCBs) were present in the water column. Sediment and fish tissue samples were collected from the Coosa River by SESD in November 2002. The results of that sampling effort showed concentrations of PCBs in the fish tissue that exceeded Georgia Environmental Protection Division (GA EPD) consumption guidelines (EPA 2003a). The sediment samples did not show significant levels of PCBs, particularly in the top six-inches, which is generally considered critical for exposure for trophic level 3 fish and macroinvertebrate organisms involved in food web dynamics. PCB contamination has been documented at and around the General Electric (GE) Plant in Rome, Georgia (Blasland, Bouck, and Lee, Inc. 2000). The plant is located approximately 2 miles northwest of the Coosa River (Figure 1). The GE Plant is the most likely source of PCBs in the surface waters in question (Blasland, Bouck, and Lee, Inc. 2000). Historically, GE had discharged wastewater and stormwater to the three previously mentioned tributaries.

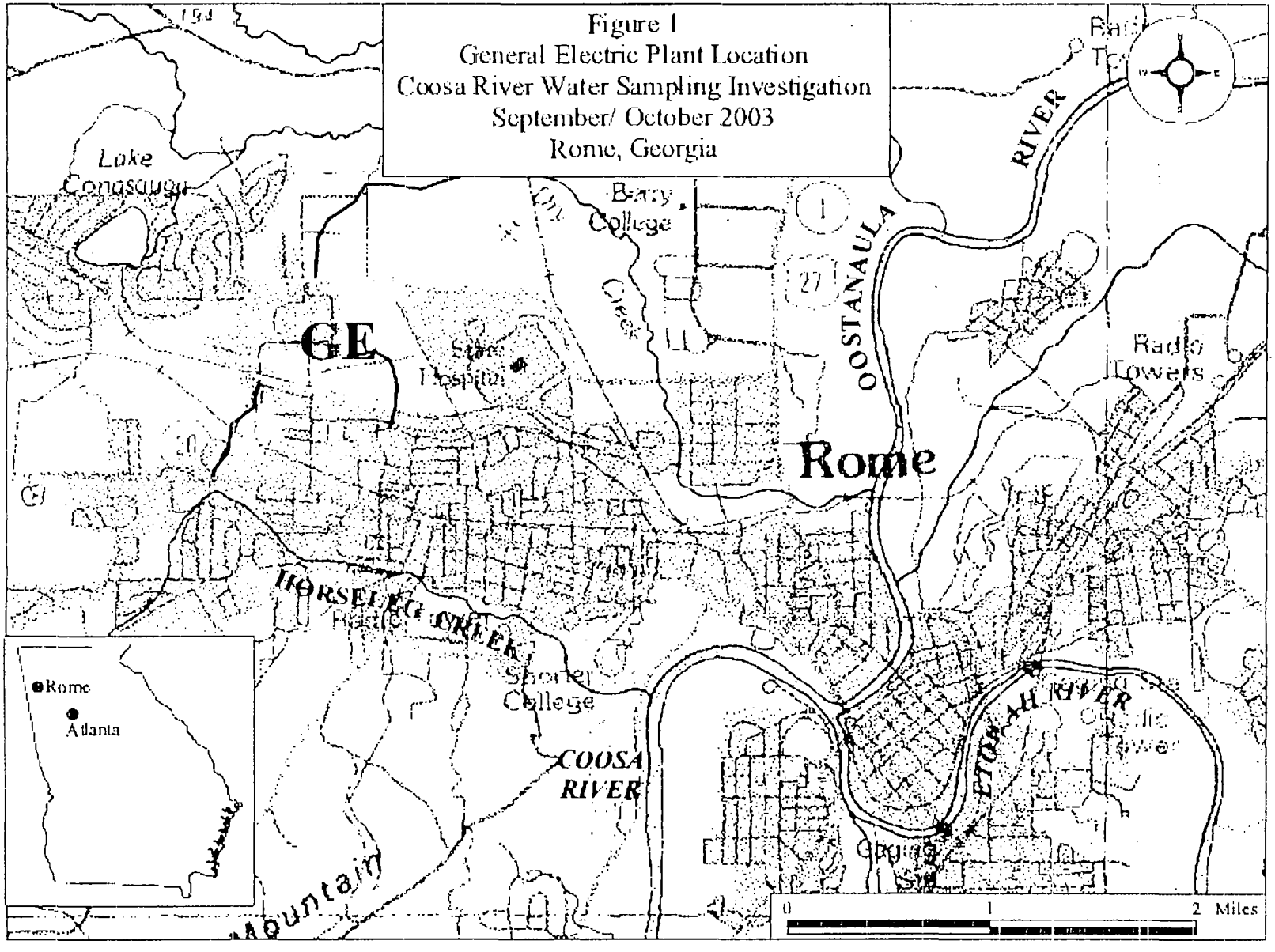
GE opened the Rome, Georgia plant in 1952 and produced a variety of medium-capacity electrical transformers. The production of electrical transformers utilized materials such as mineral oil, silicone fluid or askarel dielectric fluid designs. Askarel dielectric fluids are used as insulating fluids for electrical transformers. Dielectric fluids are composed of a combination of various chlorinated benzenes and PCBs. The trade name for GE's askarel dielectric fluid was Pyranol. (EPA 2001) PCBs were used in the manufacture of transformers at the Rome, Georgia plant from 1953 until 1977.

Prior to 1968, GE discharged all stormwater from the facility directly into four unlined ditches that discharged into either Little Dry Creek or Horseleg Creek. In 1968, GE installed oil/water separators on three of the ditches to remove potential PCB contaminated oils from the stormwater. A National Pollutant Discharge Elimination System (NPDES) permit was issued to GE for the four stormwater outfalls in 1975. Figure 2 shows the approximate locations of the ditches and their discharge points into the creeks. Outfalls 001 and 003 were located on the southwest corner of the plant and discharged into Horseleg Creek which after three miles flows into the Coosa River. Outfall 002 was located to the north of the plant and discharged into Little Dry Creek, which flows into the Oostanaula River. Outfall 004 was located on the eastern side of the plant and discharged into the South Branch of Little Dry Creek, a tributary to Little Dry Creek. In 1990, Outfalls 001 and 003 were combined and routed to an on-site treatment facility. In 1994, Outfall 004 was also routed to the treatment facility. Since 1994, the treated water has been discharged through permitted Outfall 003 into Horseleg Creek.

2.0 Objective

The objective of this sampling investigation was to determine if PCBs were present in the water column in the tributaries to the Oostanaula, Etowah and Coosa Rivers and the rivers themselves, thus providing a potential exposure pathway for the fish.

Figure 1
General Electric Plant Location
Coosa River Water Sampling Investigation
September/ October 2003
Rome, Georgia



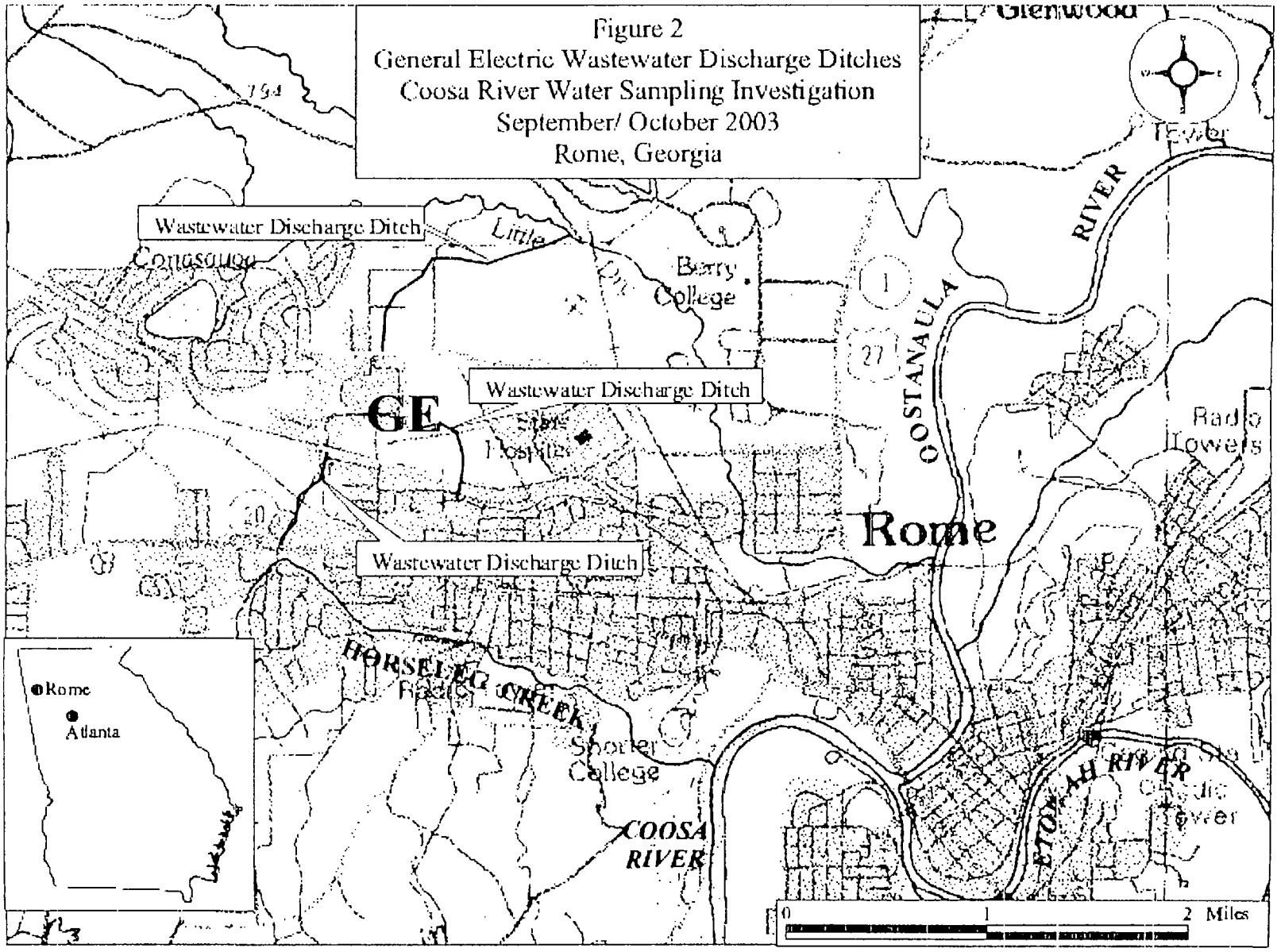


Figure 2
General Electric Wastewater Discharge Ditches
Coosa River Water Sampling Investigation
September/ October 2003
Rome, Georgia
Wastewater Discharge Ditch
Wastewater Discharge Ditch
Wastewater Discharge Ditch
GE
Rome
Berry College
Shorter College
Hospital
COOSA RIVER
COOSAWATTAE RIVER
ETOWAH RIVER
HORSELEG CREEK
Rome
Atlanta
0
1
2 Miles

3.0 Study Area

South Branch Little Dry Creek

The South Branch Little Dry Creek is an intermittent stream that originates near the southwest end of the GE property. The creek flows east through a residential area along the southern edge of the GE property and eventually into Little Dry Creek. The creek was accessed off of Charlton Street in the city sewer right-of-way behind the Wesley Southern Methodist Church and Tolbert Park. The sample intake was approximately 100 yards upstream of the confluence with Little Dry Creek. The intake was placed at mid-stream and mid-depth. The creek was approximately 12 feet wide and the water depth was approximately 8 inches. Stream gaging was conducted 25 yards downstream of the sample intake point. The total volume of water pumped through the sampler for the sample collected at LDC1 was 1,004 liters.

Little Dry Creek

Little Dry Creek flows east approximately one mile north of the GE Plant. The stream meanders to the south for two miles after it passes the Central of Georgia Railroad and again flows east for 1 mile until it reaches the Oostanaula River. The sample station was accessed from Timothy Avenue. The sample intake point was 100 yards downstream of the confluence of the South Branch Little Dry Creek and Little Dry Creek. The stream was approximately 10 feet wide and the water depth was 0.5 feet. The intake was placed at mid-stream and mid-depth. Stream gaging was conducted approximately 20 yards downstream of the sample intake point. The total volume of water pumped through the sampler for the samples collected at LDC2 was 1,001 liters.

Horseleg Creek

Horseleg Creek originates in Camps Lake which is southwest of the GE property. Horseleg Creek generally flows in an easterly direction. Near Anders Road, the creek meanders to the north near West End School, then south and eventually southeast at Burnett Road until it reaches the Coosa River. The sample was collected downstream of the Hank Street crossing. The location was accessed from a city sewer right-of-way along the southern bank of the creek. The creek was approximately one foot deep and 20 feet wide. Stream gaging was conducted 30 yards downstream of the sample intake point. The total volume of water pumped through the sampler for the sample collected from Horseleg Creek was 1,001 liters.

Etowah River

The Etowah River flows east from Lake Allatoona in Cartersville, Georgia for approximately 48 river miles to Rome, Georgia. The Etowah River sample, ER, was collected from a boat. The boat was anchored with the bow facing into the current and the intake line for the sampler was secured from the bow. The total water depth was approximately eight feet and the intake was placed four feet from the surface. Due to excessive clogging of pre-filters in the intake line which slowed the pump rate, sampling was conducted over a two day period in order to reach the target volume of 1,000 liters. A total of 1,093 liters were pumped.

3.0 Study Area

South Branch Little Dry Creek

The South Branch Little Dry Creek is an intermittent stream that originates near the southwest end of the GE property. The creek flows east through a residential area along the southern edge of the GE property and eventually into Little Dry Creek. The creek was accessed off of Charlton Street in the city sewer right-of-way behind the Wesley Southern Methodist Church and Tolbert Park. The sample intake was approximately 100 yards upstream of the confluence with Little Dry Creek. The intake was placed at mid-stream and mid-depth. The creek was approximately 12 feet wide and the water depth was approximately 8 inches. Stream gaging was conducted 25 yards downstream of the sample intake point. The total volume of water pumped through the sampler for the sample collected at LDC1 was 1,004 liters.

Little Dry Creek

Little Dry Creek flows east approximately one mile north of the GE Plant. The stream meanders to the south for two miles after it passes the Central of Georgia Railroad and again flows east for 1 mile until it reaches the Oostanaula River. The sample station was accessed from Timothy Avenue. The sample intake point was 100 yards downstream of the confluence of the South Branch Little Dry Creek and Little Dry Creek. The stream was approximately 10 feet wide and the water depth was 0.5 feet. The intake was placed at mid-stream and mid-depth. Stream gaging was conducted approximately 20 yards downstream of the sample intake point. The total volume of water pumped through the sampler for the samples collected at LDC2 was 1,001 liters.

Horseleg Creek

Horseleg Creek originates in Camps Lake which is southwest of the GE property. Horseleg Creek generally flows in an easterly direction. Near Anders Road, the creek meanders to the north near West End School, then south and eventually southeast at Burnett Road until it reaches the Coosa River. The sample was collected downstream of the Hank Street crossing. The location was accessed from a city sewer right-of-way along the southern bank of the creek. The creek was approximately one foot deep and 20 feet wide. Stream gaging was conducted 30 yards downstream of the sample intake point. The total volume of water pumped through the sampler for the sample collected from Horseleg Creek was 1,001 liters.

Etowah River

The Etowah River flows east from Lake Allatoona in Cartersville, Georgia for approximately 48 river miles to Rome, Georgia. The Etowah River sample, ER, was collected from a boat. The boat was anchored with the bow facing into the current and the intake line for the sampler was secured from the bow. The total water depth was approximately eight feet and the intake was placed four feet from the surface. Due to excessive clogging of pre-filters in the intake line which slowed the pump rate, sampling was conducted over a two day period in order to reach the target volume of 1,000 liters. A total of 1,093 liters were pumped.

Oostanaula River

The Oostanaula River is formed by the convergence of the Conasauga and Coosawattee Rivers north of Calhoun, Georgia. The Oostanaula River flows southeast for approximately 49 river miles before it reaches Rome, Georgia. The Oostanaula River sample, OR, was collected from a boat. The intake was secured from the bow, with the bow facing into the current. The total depth was 12 feet and the intake was placed six feet below the surface. A total volume of 952 liters was pumped through the sampler.

Coosa River

The Coosa River forms near downtown Rome, Georgia where the Oostanaula and Etowah Rivers converge. The Coosa River flows west from Rome to the Georgia/Alabama state line. Sample CR was collected downstream of the mouth of Horseleg Creek. The sample intake was secured from the bow of the boat and the boat was anchored into the current. The total depth was 11 feet. The intake was placed at approximately 5.5 feet below the water surface. A total volume of 821 liters was pumped through the sampler.

4.0 Study Methods

The study was conducted in two phases. Phase one consisted of sampling the tributaries and was conducted during the week of 09/22/03. Phase two consisted of sampling the rivers and was conducted during the week of 10/21/03. A total of six samples were collected from the locations listed in Table 1.

Table 1
Sample Station Locations
Coosa River PCB Water Sampling Investigation
Rome, Georgia
September/October 2003
03-1068, 04-0048

Station	Location	GPS Coordinates
LDC1	South Branch Little Dry Creek	N 34° 16.138' W 85° 11.492'
LDC2	Little Dry Creek	N 34° 16.222' W 85° 11.385'
HLC1	Horseleg Creek	N 34° 15.571' W 85° 12.061'
ER	Etowah River	N 34° 14.757' W 85° 10.382'
OR	Oostanaula River	N 34° 16.459' W 85° 10.253'
CR	Coosa River	N 34° 14.568' W 85° 11.547'

Figure 3 shows the sample locations in relation to the GE Plant. The locations on the Oostanaula River and the Etowah River served as controls to determine if PCBs were present in the water column upstream of the targeted reaches for this study. The dissolved and particulate fractions of the water column were sampled and analyzed separately at each station. This was accomplished using an Infiltrex 300® trace organic sampler. All samples were analyzed for 209 PCB congeners using EPA Method 1668A (high-resolution mass spectrometer). Continuous recording multi-probe sondes (YSI 6920) were deployed at each station throughout the duration of the sample collection period. The sondes recorded measurements of dissolved oxygen, pH, temperature, conductivity, turbidity, and depth at 15 minute intervals. This data is presented in Appendix A.

At the time of sample collection, GE was conducting removal operations along the banks of Little Dry Creek and Horseleg Creek. The sample stations on Little Dry Creek and Horseleg Creek were located upstream of the removal areas in order to eliminate the possibility of these operations impacting the sample results. The tributary samples were collected in the following order: South Branch Little Dry Creek, Little Dry Creek and Horseleg Creek. The locations were selected based on what was anticipated to be least contaminated to most contaminated. The lowest concentrations were detected in Horseleg Creek, then Little Dry Creek. South Branch Little Dry Creek had the highest total PCB concentrations. It should be noted that approximately 1.62 inches of rainfall was recorded in the Rome, Georgia area on Monday, September 22, 2003 prior to commencement of sampling on Tuesday, September 23, 2003. It is possible that the results were influenced by contaminants delivered to the surface waters via groundwater infiltration or runoff from the adjacent flood plains. However, the rainfall and subsequent runoff did not result in conditions that were incompatible with the study objective to determine if PCBs were present in the subject surface waters. Further study would be required to determine if the PCB concentrations observed in the tributaries were influenced by groundwater and particularly from groundwater in the vicinity of the GE property.

5.0 Results and Discussion

Manufactured PCBs are mixtures of congeners of the PCB molecule that differ in their chlorine content. Most PCBs were commercially produced in the United States as standard mixtures bearing the brand name Aroclor (Rushneck, et al). Although their chemical properties vary, different mixtures have many common PCB congeners. PCBs also occur as mixtures of congeners in the environment but their composition differs from the commercial mixtures. This is because after release into the environment, the composition of PCB mixtures changes over time, through partitioning, chemical transformation and preferential bioaccumulation of certain congeners (EPA 1998). Due to the potential for changes in composition of PCB mixtures that occur in the environment, the samples were analyzed for individual congeners using Method 1668A (EPA 1999). The congener, total Aroclor and homologue results are presented in Appendix B. Total Aroclor values were calculated based on the congener results (Axys Analytical Services, Ltd 2003). Total PCB values based on the calculated aroclor results are in Table 2. Total PCB values are used for the basis of the discussion of the results in this report.

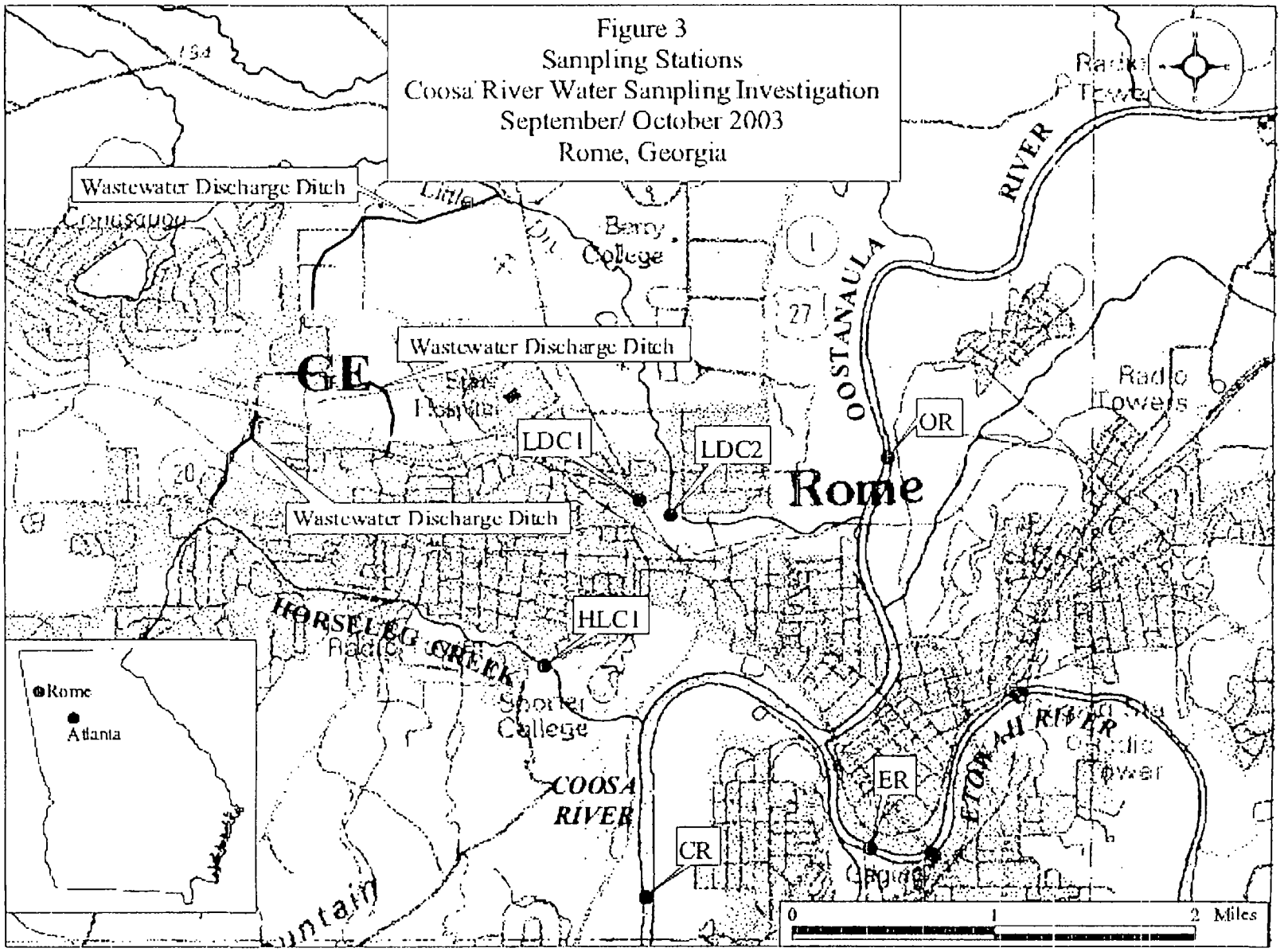


Figure 3
Sampling Stations
Coosa River Water Sampling Investigation
September/ October 2003
Rome, Georgia
Wastewater Discharge Ditch
Wastewater Discharge Ditch
Wastewater Discharge Ditch
GE
LDC1
LDC2
OR
HLC1
ER
CR
Rome
OOSTANAULA RIVER
HORSELEG CREEK
COOSA RIVER
ETOWAH RIVER
Berry College
Shorter College
Radio Towers
Rome
Atlanta
0
1
2 Miles

Table 2
Total PCB Concentrations
Coosa River PCB Water Sampling Investigation
Rome, Georgia
September/October 2003
03-1068, 04-0048

Station	Location	Calculated Total PCB Concentration Dissolved Phase* (µg/l)	Calculated Total PCB Concentration Particulate Phase (µg/l)	Calculated Total PCB Concentration Dissolved and Particulate (µg/l)
LDC1	South Branch Little Dry Creek	0.173	0.0247	0.1977
LDC2	Little Dry Creek	0.149	0.0069	0.1559
HLC1	Horseleg Creek	0.0735	0.0039	0.0774
ER	Etowah River	0.000120	0.000170	0.00029
OR	Oostanaula River	0.000120	0.000160	0.00028
CR	Coosa River	0.000170	0.000240	0.00041

*Dissolved phase = <1 micron based on pore size of glass fiber filter.

Exceeds EPA water quality criteria continuous concentration (EPA 2002) of 0.014 µg/l and the EPA human health criteria (EPA 2002) of 0.000064 µg/l

Exceeds EPA human health criteria of 0.000064 µg/l (EPA 2002)

The total PCB concentrations from all of the tributaries and rivers exceeded EPA's human health water quality criteria of 0.000064 µg/l (EPA 2002). All of the tributary samples exceeded EPA's continuous concentration water quality criteria of 0.014 µg/l in the dissolved phase samples (EPA 2002).

Significant concentrations of PCBs were detected in the dissolved phase in all of the tributary samples. The concentrations detected in the particulate phase of the tributary samples were also elevated, but not as extensively as the dissolved phase samples. The PCB concentrations in the dissolved phase tributary samples were two to three orders of magnitude higher than the concentrations detected in the dissolved phase river samples. Additional information regarding the source(s) of PCBs in the rivers would be needed to fully understand the differences in concentrations between the rivers and tributaries. However, the increased volume of water in the rivers may cause dilution of the concentrations of PCBs introduced from the tributaries or other sources. Table 3 contains the flow rates for the tributary and river stations on the days

that sampling was conducted. The tributary flow rates were measured periodically throughout the duration of sample collection using a vertical-axis mounted Price pygmy meter. The values reported in Table 3 are averages. The flows for the rivers were obtained from United States Geological Survey gaging stations nearest to the sample locations (Stamey, unpublished data).

Table 3
Tributary and River Flow rates
Coosa River PCB Water Sampling Investigation
Rome, Georgia
September/October 2003
03-1068, 04-0048

Station	Date	Average Flow (cfs)
LDC1	09/23/03	0.15
LDC2	09/24/03	0.11
HLC1	09/25/03	1.04
ER	10/21/03 & 10/22/03	2500
OR	10/23/03	1980
CR	10/24/03	5350

Similar concentrations of PCBs were detected in the samples from the control stations on the Oostanaula and Etowah Rivers and in the downstream location, the Coosa River. The concentrations in the control samples were within approximately 30 percent of the downstream station. This difference may not be significant because the analytical method has a similar degree of precision. Additional data is needed to determine background concentrations of PCBs in the water column.

6.0 Data Management

6.1 Documentation and Records

All field activities were documented in bound logbooks. Upon completion of sampling activities, all documents, records and electronic files generated during the field investigation were processed, labeled, and maintained by the project leader during preparation of the report. Upon completion and transmittal of the report to the appropriate parties, project records were submitted to the SESD Records Room. Access to the analytical results for this project are available to EPA personnel through the Region 4 Laboratory Information Management System (R4LIMS).

6.2 Quality Assurance and Quality Control

Infiltrex 300® trace organic sampler collection and decontamination procedures were outlined in Appendix B of the Coosa River PCB Water Sampling Investigation Quality Assurance Project Plan (EPA 2003b). The following quality control samples were collected during this study to validate the procedures used to collect the samples and decontaminate the equipment.

Table 4
Quality Control Samples
Coosa River Water Sampling Investigation
September/October 2003
Rome, Georgia

Date/Time		Sample	Station	Mass of PCBs (pg)	Volume of Sample (L)	Concentration (pg/l)
09/19/03	0940	QA-OW1	Organic free water blank	37	0.973	38
09/19/03	1005	QA-EB1	Equipment Rinse Blank	229	0.917	250
09/23/03	0953	LDC1-D	South Branch Little Dry Creek	190,000,000	1,004	190,000
09/24/03	0850	LDC2-D	Little Dry Creek	150,000,000	1,001	150,000
09/25/03	0735	QA-EB2	Equipment Rinse Blank	1000	1.01	990
09/25/03	0820	HLC1-D	Horseleg Creek	74,000,000	1,001	74,000
10/21/03	1050	ER-D	Etowah River	131,172	1,093	120
10/22/03	2015	QA-EB3	Equipment Rinse Blank	84	0.981	86
10/23/03	0903	OR-D	Oostanaula River	114,252	952	120
10/24/03	0858	CR-D	Coosa River	139,536	821	170
10/27/03	1120	QA-EB4	Eaquipment Rinse Blank	136	0.974	140

The mass of total PCBs detected in the quality control samples in picograms (pg) is insignificant when compared to the mass detected in the environmental samples.

All samples were handled in accordance to the procedures outlined in the Ecological Assessment Standard Operating Procedures and Quality Assurance Manual, January 2002. All equipment was calibrated according to the manufacturer's recommendations. Calibration was performed at the beginning of each deployment and checked against known standards upon retrieval.

Analytical results were validated and verified by the U.S. EPA, Region 4, SESD, Office of Quality Assurance and Data Integration.

7.0 Conclusions

Based on the results of the tributary samples, there is a source or sources present which are contributing PCB contamination to the water column at levels significantly higher than EPA's water quality criteria for total PCBs. Because the tributaries flow into the Oostanaula and Coosa Rivers, this source is a potential pathway of exposure for fish in the rivers. Further study would be needed to determine the source(s) of the contamination, the significance of the source(s) and the influence of the ongoing remediation activities on water column PCB concentrations.

Based on the results of the river samples, PCBs are present in the water column. Although an upward trend in total PCBs was observed from the control locations to downstream in the Coosa River, the data from this investigation is not conclusive concerning a significant increase in PCB levels downstream of the mouths of the tributaries. Samples collected at the mouths' of the tributaries may be helpful in determining the PCB contribution from the tributaries to the rivers.

8.0 Literature Cited

Axys Analytical Services, Ltd. 2003. *MLA-010 Analytical Method for the Determination of: 209 Congeners by EPA Method 1668A*, Rev. 5. Axys Analytical Services, Ltd. Sydney, British Columbia.

Blasland, Bouck, and Lee, Inc. 2000. *RCRA Facility Investigation Phase 2 Report, General Electric, Rome, Georgia.* Blasland, Bouck, and Lee, Inc., Cary, North Carolina.

EPA. 1998. *Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants; States' Compliance - Revision of Polychlorinated Biphenyls (PCBs) Criteria.* Federal Register 63:16182-16188.

EPA. 1999. *Method 1668, Revision A: Chlorinated Biphenly Congeners in Water, Soil, Sediment, and Tissue by HRGC/HRMS*, EPA821-R-00-002. Washington, D.C.

EPA. 2001. *Final Expanded Site Inspection Report: General Electric Company, Rome, Floyd County, Georgia.* U.S. Environmental Protection Agency, Atlanta, Georgia.

EPA. 2002. *National Recommended Water Quality Criteria: 2002.* U.S. Environmental Protection Agency. EPA-822-R-02-047. Washington, D.C.

EPA 2003a. *Coosa River PCB TMDL Environmental Sampling Report.* U.S. Environmental Protection Agency, Region 4, Science and Ecosystem Support Division, Ecological Assessment Branch, Athens, GA.

EPA 2003b. *Coosa River PCB Water Sampling Investigation Quality Assurance Project Plan.* U.S. Environmental Protection Agency, Region 4, Science and Ecosystem Support Division, Ecological Assessment Branch, Athens, GA.

Rushneck, D.R., A. Beliveau, B. Fowler, C. Hamilton, D. Hoover, K. Kaye, M. Bery, T. Smith, W. Telliard, H. Roman, E. Ruder, L. Ryan. 2003. *Concentrations of dioxin-like PCB congeners in unweathered Aroclors by HRGC/HRMS using EPA Method 1668A.* Chemosphere. Volume 54, Issue 1, January 2004, pp. 79-87.

Stamey, T. Unpublished data. United States Geological Survey Stream Gaging Program, 2003.

APPENDIX A
IN SITU WATER QUALITY PARAMETERS

Appendix A
Station LDC1
In situ Water Quality Data
Coosa River Water Sampling Investigation
September/October 2003
Rome, Georgia

Date mm/dd/yy	Time hh:mm:ss	Temp C	SpCond uS/cm	DO mg/L	DO %	Depth ft	pH	Turbidity NTU
9/23/2003	9:16:59	19.96	214.50	7.03	77.3	0.04	7.59	23.33
9/23/2003	9:31:59	19.95	215.16	6.99	76.9	0.04	7.62	21.56
9/23/2003	9:46:59	19.98	216.28	7.00	77.0	0.04	7.64	22.60
9/23/2003	10:01:59	20.00	217.09	6.99	76.9	0.04	7.64	20.21
9/23/2003	10:16:59	20.02	217.94	6.99	77.0	0.04	7.65	21.62
9/23/2003	10:31:59	20.07	218.98	6.99	77.1	0.04	7.65	20.15
9/23/2003	10:46:59	20.15	219.86	7.01	77.3	0.04	7.66	20.89
9/23/2003	11:02:00	20.23	220.70	7.03	77.7	0.04	7.66	19.60
9/23/2003	11:16:59	20.28	221.45	7.08	78.3	0.04	7.67	21.07
9/23/2003	11:31:59	20.41	221.96	7.11	78.8	0.04	7.68	19.60
9/23/2003	11:46:59	20.54	222.31	7.06	78.5	0.04	7.68	20.34
9/23/2003	12:01:59	20.60	223.19	7.09	78.9	0.04	7.68	19.54
9/23/2003	12:16:59	20.73	225.15	7.17	80.1	0.04	7.71	20.40
9/23/2003	12:32:00	20.96	226.89	7.21	80.9	0.04	7.73	19.48
9/23/2003	12:46:59	21.19	230.88	7.18	80.9	0.04	7.76	19.73
9/23/2003	13:01:59	21.46	234.01	7.19	81.4	0.05	7.80	18.57
9/23/2003	13:16:59	21.81	235.63	7.35	83.8	0.05	7.86	18.87
9/23/2003	13:32:00	22.06	236.74	7.27	83.3	0.05	7.90	16.80
9/23/2003	13:46:59	22.44	237.77	7.39	85.3	0.05	7.98	18.26
9/23/2003	14:01:59	22.60	239.48	7.40	85.6	0.05	8.00	17.47
9/23/2003	14:16:59	22.76	240.68	7.39	85.8	0.05	7.99	18.08
9/23/2003	14:31:59	22.85	240.96	7.44	86.5	0.05	8.01	16.49
9/23/2003	14:46:59	23.16	240.94	7.40	86.6	0.05	8.01	16.80
9/23/2003	15:01:59	23.26	242.30	7.44	87.2	0.05	8.05	15.52
9/23/2003	15:16:59	23.39	242.61	7.44	87.4	0.05	8.06	16.55
9/23/2003	15:31:59	23.56	243.23	7.44	87.7	0.05	8.06	15.82
9/23/2003	15:47:00	23.74	243.45	7.45	88.1	0.05	8.07	16.74
9/23/2003	16:01:59	23.96	243.89	7.43	88.2	0.05	8.07	15.88
9/23/2003	16:16:59	24.07	244.41	7.35	87.4	0.05	8.05	15.94
9/23/2003	16:31:59	24.09	245.29	7.42	88.3	0.05	8.06	15.33
9/23/2003	16:46:59	24.10	244.78	7.36	87.7	0.05	8.05	15.58
9/23/2003	17:01:59	24.14	245.33	7.31	87.2	0.05	8.04	15.03
9/23/2003	17:17:00	24.19	245.96	7.29	87.0	0.05	8.04	15.15
9/23/2003	17:31:59	24.28	245.85	7.27	86.9	0.05	8.04	14.29
9/23/2003	17:47:00	24.22	245.45	7.24	86.4	0.05	8.03	15.27
9/23/2003	18:01:59	24.26	246.16	7.18	85.7	0.05	8.02	13.99
9/23/2003	18:16:59	24.25	246.16	7.11	84.9	0.05	8.02	14.11
9/23/2003	18:31:59	24.22	246.14	7.05	84.2	0.05	8.00	13.56
9/23/2003	18:46:59	24.12	245.97	7.01	83.5	0.05	7.99	13.87
9/23/2003	19:01:59	24.04	246.34	6.96	82.8	0.05	7.97	12.59
9/23/2003	19:16:59	23.88	246.27	6.94	82.3	0.05	7.96	13.44
9/23/2003	19:31:59	23.72	246.11	6.83	80.8	0.05	7.95	12.59

Appendix A
Station LDC1
In situ Water Quality Data
Coosa River Water Sampling Investigation
September/October 2003
Rome, Georgia

Date	Time	Temp	SpCond	DO	DO	Depth	pH	Turbidity
mm/dd/yy	hh:mm:ss	C	uS/cm	mg/L	%	ft		NTU
9/23/2003	19:47:00	23.55	246.52	6.81	80.3	0.05	7.93	13.26
9/23/2003	20:01:59	23.37	246.72	6.76	79.4	0.04	7.92	12.71
9/23/2003	20:16:59	23.28	246.38	6.70	78.6	0.04	7.91	12.89

Appendix A
Station LDC2
In situ Water Quality Data
Coosa River Water Sampling Investigation
September/October 2003
Rome, Georgia

Date mm/dd/yy	Time hh:mm:ss	Temp C	SpCond uS/cm	DO mg/L	DO %	Depth ft	pH	Turbidity NTU
9/24/2003	9:31:59	18.71	256.04	5.35	57.4	0.00	7.53	5.87
9/24/2003	9:46:59	18.71	256.29	5.36	57.5	0.00	7.53	5.87
9/24/2003	10:02:00	18.73	256.36	5.34	57.2	0.00	7.54	5.63
9/24/2003	10:16:59	18.74	256.71	5.37	57.6	0.00	7.54	5.57
9/24/2003	10:32:00	18.79	257.00	5.39	57.9	0.00	7.54	5.69
9/24/2003	10:46:59	18.81	257.13	5.41	58.2	0.00	7.54	5.51
9/24/2003	11:01:59	18.84	257.44	5.43	58.4	0.00	7.54	5.44
9/24/2003	11:17:00	18.88	257.44	5.49	59.0	0.00	7.54	5.26
9/24/2003	11:31:59	18.93	257.61	5.46	58.8	0.00	7.54	5.08
9/24/2003	11:46:59	19.00	257.72	5.45	58.8	0.00	7.54	4.96
9/24/2003	12:02:00	19.07	257.72	5.54	59.8	0.00	7.55	4.59
9/24/2003	12:17:00	19.16	257.78	5.55	60.0	0.01	7.55	4.65
9/24/2003	12:31:59	19.28	258.22	5.59	60.7	0.01	7.55	4.53
9/24/2003	12:46:59	19.48	258.32	5.65	61.5	0.01	7.55	4.28
9/24/2003	13:02:00	19.57	258.80	5.72	62.4	0.01	7.55	4.10
9/24/2003	13:16:59	19.69	258.89	5.85	64.0	0.01	7.55	4.16
9/24/2003	13:31:59	19.73	259.34	5.81	63.6	0.01	7.56	3.98
9/24/2003	13:46:59	19.83	259.43	5.90	64.7	0.01	7.57	3.92
9/24/2003	14:02:00	19.90	259.99	5.92	65.1	0.01	7.57	3.92
9/24/2003	14:16:59	20.00	260.09	5.98	65.8	0.01	7.58	3.92
9/24/2003	14:31:59	20.06	260.40	6.03	66.4	0.01	7.58	3.67
9/24/2003	14:46:59	20.15	260.73	6.07	67.0	0.01	7.59	3.74
9/24/2003	15:02:00	20.26	261.00	6.09	67.3	0.01	7.60	3.74
9/24/2003	15:17:00	20.39	261.00	6.23	69.1	0.01	7.60	3.49
9/24/2003	15:31:59	20.51	260.99	6.21	69.0	0.01	7.61	3.31
9/24/2003	15:46:59	20.57	261.23	6.25	69.5	0.01	7.61	3.37
9/24/2003	16:02:00	20.65	261.78	6.25	69.7	0.01	7.62	3.37
9/24/2003	16:16:59	20.75	261.97	6.29	70.2	0.01	7.62	3.31
9/24/2003	16:31:59	20.91	261.75	6.35	71.2	0.01	7.63	3.43
9/24/2003	16:46:59	20.92	261.97	6.32	70.9	0.01	7.63	3.06
9/24/2003	17:01:59	21.01	262.05	6.37	71.6	0.01	7.63	3.19
9/24/2003	17:16:59	21.09	262.04	6.36	71.5	0.01	7.64	3.00
9/24/2003	17:31:59	21.16	262.27	6.44	72.5	0.01	7.64	2.88
9/24/2003	17:47:00	21.22	262.21	6.43	72.4	0.01	7.64	3.00
9/24/2003	18:02:00	21.26	262.17	6.43	72.5	0.01	7.64	2.88
9/24/2003	18:16:59	21.28	262.37	6.41	72.3	0.01	7.65	2.76
9/24/2003	18:31:59	21.32	262.53	6.37	72.0	0.01	7.65	2.88
9/24/2003	18:46:59	21.35	262.48	6.36	71.9	0.01	7.65	2.58

Appendix A
Station HLC1
In situ Water Quality Data
Coosa River Water Sampling Investigation
September/October 2003
Rome, Georgia

Date mm/dd/yy	Time hh:mm:ss	Temp C	SpCond uS/cm	DO mg/L	DO %	Depth ft	pH	Turbidity NTU
9/25/2003	8:31:59	18.78	212.44	7.16	76.8	0.15	7.41	9.47
9/25/2003	8:46:59	18.75	211.24	7.18	77.1	0.15	7.42	9.05
9/25/2003	9:01:59	18.74	210.88	7.21	77.3	0.15	7.43	9.53
9/25/2003	9:16:59	18.72	210.51	7.28	78.1	0.15	7.44	8.80
9/25/2003	9:32:00	18.72	210.11	7.35	78.8	0.15	7.44	9.05
9/25/2003	9:46:59	18.71	210.33	7.41	79.5	0.15	7.44	8.19
9/25/2003	10:02:00	18.76	209.17	7.50	80.5	0.15	7.46	8.92
9/25/2003	10:17:00	18.81	208.76	7.60	81.6	0.15	7.47	8.80
9/25/2003	10:31:59	18.90	208.19	7.73	83.2	0.15	7.48	9.59
9/25/2003	10:46:59	19.03	207.09	7.87	84.9	0.15	7.49	9.84
9/25/2003	11:02:00	19.21	206.52	7.97	86.3	0.15	7.51	10.45
9/25/2003	11:16:59	19.36	207.20	8.11	88.1	0.15	7.51	11.06
9/25/2003	11:32:00	19.52	207.18	8.20	89.4	0.15	7.52	11.43
9/25/2003	11:46:59	19.72	206.01	8.36	91.4	0.15	7.55	11.55
9/25/2003	12:01:59	19.85	207.25	8.40	92.2	0.15	7.54	11.24
9/25/2003	12:16:59	19.95	207.99	8.41	92.5	0.15	7.54	11.43
9/25/2003	12:31:59	20.16	207.88	8.51	94.0	0.15	7.55	10.88
9/25/2003	12:46:59	20.30	208.77	8.54	94.5	0.15	7.55	10.94
9/25/2003	13:02:00	20.33	210.12	8.54	94.6	0.14	7.54	10.57
9/25/2003	13:16:59	20.36	211.06	8.46	93.8	0.14	7.53	10.82
9/25/2003	13:31:59	20.38	212.30	8.39	93.0	0.14	7.52	10.08
9/25/2003	13:46:59	20.52	211.74	8.38	93.2	0.14	7.54	9.29
9/25/2003	14:02:00	20.59	213.83	8.43	93.8	0.14	7.53	8.92
9/25/2003	14:16:59	20.73	215.03	8.48	94.7	0.13	7.51	8.37
9/25/2003	14:31:59	20.89	217.71	8.47	94.9	0.13	7.49	8.31
9/25/2003	14:47:00	20.94	219.23	8.45	94.7	0.13	7.46	8.86
9/25/2003	15:01:59	21.00	220.09	8.44	94.8	0.13	7.43	8.07
9/25/2003	15:16:59	21.14	219.10	8.51	95.7	0.13	7.46	7.70
9/25/2003	15:31:59	21.21	218.70	8.55	96.4	0.13	7.50	8.01
9/25/2003	15:47:00	21.22	219.42	8.45	95.3	0.13	7.46	8.80
9/25/2003	16:01:59	21.38	216.08	8.45	95.6	0.13	7.51	8.50
9/25/2003	16:16:59	21.43	215.52	8.42	95.3	0.13	7.49	7.21
9/25/2003	16:31:59	21.38	217.30	8.45	95.5	0.13	7.52	7.64
9/25/2003	16:47:00	21.47	216.23	8.37	94.8	0.13	7.50	7.58
9/25/2003	17:01:59	21.35	216.78	8.39	94.8	0.13	7.50	8.19
9/25/2003	17:16:59	21.43	217.21	8.20	92.8	0.13	7.48	6.79
9/25/2003	17:32:00	21.17	221.91	8.22	92.6	0.13	7.45	7.34
9/25/2003	17:46:59	21.42	217.89	8.03	90.9	0.14	7.46	7.03
9/25/2003	18:01:59	20.93	228.97	7.86	88.1	0.14	7.36	6.97
9/25/2003	18:16:59	21.13	219.28	7.83	88.1	0.14	7.41	7.15
9/25/2003	18:31:59	21.15	218.98	7.61	85.7	0.15	7.40	6.42
9/25/2003	18:46:59	21.28	218.74	7.51	84.7	0.14	7.40	6.48

Appendix A
Station ER
In situ Water Quality Data
Coosa River Water Sampling Investigation
September/October 2003
Rome, Georgia

Date mm/dd/yy	Time hh:mm:ss	Temp C	SpCond uS/cm	DO mg/L	DO %	Depth ft	pH	Turbidity NTU
10/21/2003	10:31:59	17.70	154.32	9.17	96.3	2.53	7.63	24.91
10/21/2003	10:46:59	17.74	153.03	9.14	96.1	2.44	7.66	25.16
10/21/2003	11:01:59	17.80	151.32	9.12	95.9	2.63	7.63	25.89
10/21/2003	11:16:59	17.86	149.34	9.10	95.8	2.48	7.65	29.13
10/21/2003	11:31:59	17.93	147.03	9.07	95.7	2.39	7.65	26.87
10/21/2003	11:46:59	17.99	144.37	9.04	95.5	2.48	7.64	24.67
10/21/2003	12:01:59	18.08	141.61	9.02	95.4	2.23	7.59	22.84
10/21/2003	12:17:00	18.18	138.22	8.98	95.3	2.58	7.60	24.00
10/21/2003	12:31:59	18.28	134.72	8.95	95.1	2.54	7.59	25.77
10/21/2003	12:47:00	18.41	131.02	8.91	95.0	2.40	7.58	21.31
10/21/2003	13:01:59	18.54	127.18	8.89	95.0	2.51	7.56	21.80
10/21/2003	13:16:59	18.67	123.21	8.83	94.6	2.57	7.55	19.85
10/21/2003	13:31:59	18.81	119.56	8.78	94.3	2.53	7.53	21.98
10/21/2003	13:46:59	18.95	115.75	8.74	94.1	2.47	7.51	20.70
10/21/2003	14:01:59	19.07	112.01	8.69	93.9	2.34	7.49	20.46
10/21/2003	14:17:00	19.19	108.84	8.68	93.9	2.50	7.47	18.75
10/21/2003	14:31:59	19.32	105.61	8.65	93.8	2.55	7.46	19.12
10/21/2003	14:46:59	19.44	102.56	8.60	93.6	2.39	7.45	21.37
10/21/2003	15:02:00	19.54	99.85	8.57	93.5	2.62	7.44	19.91
10/21/2003	15:16:59	19.63	97.13	8.56	93.5	2.52	7.43	15.94
10/21/2003	15:31:59	19.72	94.86	8.55	93.5	2.57	7.42	17.35
10/21/2003	15:46:59	19.82	92.90	8.55	93.7	2.59	7.41	15.27
10/21/2003	16:01:59	19.90	90.99	8.55	93.8	2.60	7.40	15.39
10/21/2003	16:16:59	19.97	89.36	8.55	94.0	2.62	7.41	15.21
10/21/2003	16:31:59	20.03	87.93	8.56	94.2	2.76	7.40	14.23
10/21/2003	16:47:00	20.08	87.22	8.57	94.4	2.77	7.40	14.60
10/21/2003	17:01:59	20.13	85.56	8.60	94.9	2.70	7.40	14.42
10/21/2003	17:17:00	20.17	84.66	8.60	94.9	2.65	7.40	15.09
10/21/2003	17:31:59	20.20	83.83	8.63	95.3	2.68	7.41	20.03
10/21/2003	17:46:59	20.24	83.16	8.63	95.3	2.66	7.41	12.65
10/21/2003	18:01:59	20.26	82.58	8.66	95.7	2.61	7.41	10.63
10/21/2003	18:16:59	20.27	82.13	8.66	95.8	2.69	7.42	10.94
10/21/2003	18:31:59	20.28	81.72	8.67	95.9	2.68	7.42	8.68
10/21/2003	18:46:59	20.30	81.33	8.69	96.1	2.73	7.42	8.13
10/21/2003	19:02:00	20.31	81.10	8.69	96.2	2.75	7.42	9.66
10/21/2003	19:16:59	20.31	80.87	8.71	96.4	2.75	7.43	7.95
10/21/2003	19:31:59	20.31	80.70	8.72	96.5	2.78	7.44	6.79
10/21/2003	19:47:00	20.31	80.62	8.72	96.5	2.75	7.44	7.76
10/21/2003	20:01:59	20.30	80.54	8.75	96.8	2.76	7.44	6.60
10/21/2003	20:16:59	20.29	80.52	8.74	96.7	2.79	7.45	6.60
10/21/2003	20:32:00	20.28	80.51	8.74	96.7	2.68	7.44	5.26

Appendix A
Station ER
In situ Water Quality Data
Coosa River Water Sampling Investigation
September/October 2003
Rome, Georgia

Date mm/dd/yy	Time hh:mm:ss	Temp C	SpCond uS/cm	DO mg/L	DO %	Depth ft	pH	Turbidity NTU
10/22/2003	9:17:00	19.49	92.32	8.40	91.5	2.39	7.37	27.84
10/22/2003	9:31:59	19.44	95.05	8.36	91.0	2.23	7.40	25.28
10/22/2003	9:47:00	19.39	98.42	8.36	90.8	1.90	7.37	24.18
10/22/2003	10:01:59	19.35	102.22	8.38	91.0	2.11	7.40	25.46
10/22/2003	10:16:59	19.31	105.94	8.40	91.1	2.27	7.44	25.65
10/22/2003	10:31:59	19.29	109.37	8.39	91.0	2.26	7.45	24.91
10/22/2003	10:46:59	19.26	112.20	8.42	91.3	2.20	7.45	21.62
10/22/2003	11:02:00	19.25	114.09	8.40	91.0	2.33	7.45	21.98
10/22/2003	11:16:59	19.24	115.23	8.40	91.0	2.13	7.45	19.54
10/22/2003	11:32:00	19.26	115.77	8.39	90.9	2.41	7.46	20.15
10/22/2003	11:46:59	19.29	115.21	8.39	91.0	2.29	7.45	19.67
10/22/2003	12:01:59	19.33	114.27	8.38	90.9	2.35	7.43	21.25
10/22/2003	12:16:59	19.39	112.68	8.33	90.5	2.50	7.40	18.32
10/22/2003	12:31:59	19.46	110.62	8.29	90.3	2.35	7.37	16.55
10/22/2003	12:47:00	19.53	108.18	8.28	90.3	2.62	7.31	16.98
10/22/2003	13:01:59	19.61	105.56	8.23	89.8	2.60	7.34	17.90
10/22/2003	13:16:59	19.68	102.82	8.20	89.6	2.48	7.37	15.64
10/22/2003	13:31:59	19.77	99.99	8.16	89.4	2.59	7.36	18.87
10/22/2003	13:47:00	19.84	97.21	8.06	88.4	2.89	7.33	18.08
10/22/2003	14:01:59	19.91	94.75	8.03	88.2	2.87	7.22	13.50
10/22/2003	14:16:59	19.99	92.30	8.02	88.2	2.84	7.32	13.81
10/22/2003	14:31:59	20.06	90.10	8.03	88.4	2.82	7.24	12.71
10/22/2003	14:46:59	20.13	88.16	8.01	88.3	2.88	7.23	13.62
10/22/2003	15:02:00	20.17	86.45	8.02	88.5	2.73	7.22	11.91
10/22/2003	15:16:59	20.22	84.93	8.01	88.5	2.74	7.24	9.29
10/22/2003	15:32:00	20.27	83.52	8.04	88.9	2.77	7.30	11.67
10/22/2003	15:46:59	20.31	82.44	8.03	88.9	2.82	7.30	9.11
10/22/2003	16:01:59	20.35	81.41	8.04	89.1	2.85	7.30	9.84
10/22/2003	16:16:59	20.37	80.63	8.08	89.5	2.75	7.30	7.70
10/22/2003	16:31:59	20.39	79.88	8.09	89.6	2.92	7.30	7.76
10/22/2003	16:47:00	20.41	79.39	8.11	89.9	2.95	7.32	7.89
10/22/2003	17:01:59	20.43	78.91	8.15	90.5	3.04	7.32	7.89
10/22/2003	17:17:00	20.43	78.52	8.19	90.8	3.01	7.33	7.52
10/22/2003	17:31:59	20.43	78.25	8.20	91.0	3.04	7.33	6.18
10/22/2003	17:46:59	20.42	78.02	8.22	91.2	2.98	7.34	5.63
10/22/2003	18:01:59	20.41	77.86	8.26	91.6	3.09	7.34	5.63
10/22/2003	18:16:59	20.41	77.75	8.28	91.8	3.04	7.36	5.14
10/22/2003	18:31:59	21.25	40.78	8.17	92.0	0.17	8.20	-6.46
10/22/2003	18:46:59	21.13	40.95	8.18	91.9	0.17	8.17	-6.52
10/22/2003	19:02:00	20.74	41.19	8.25	92.1	0.17	8.09	-6.21
10/22/2003	19:16:59	20.52	41.15	8.23	91.5	0.17	8.09	-6.52
10/22/2003	19:31:59	18.80	0.77	9.06	97.3	0.18	7.22	25.95

Appendix A
Station ER
In situ Water Quality Data
Coosa River Water Sampling Investigation
September/October 2003
Rome, Georgia

Date mm/dd/yy	Time hh:mm:ss	Temp C	SpCond uS/cm	DO mg/L	DO %	Depth ft	pH	Turbidity NTU
10/22/2003	19:46:59	20.52	0.72	8.62	95.7	0.17	7.41	256.12
10/22/2003	20:01:59	20.79	0.72	8.57	95.7	0.17	7.47	-5.73
10/22/2003	20:16:59	21.08	0.71	8.51	95.6	0.17	7.49	-4.50
10/22/2003	20:31:59	21.33	0.72	8.47	95.6	0.18	7.44	-5.79
10/22/2003	20:47:00	21.55	0.73	8.41	95.4	0.18	7.49	-4.81
10/22/2003	21:01:59	21.74	0.73	8.39	95.4	0.18	7.49	-5.73
10/22/2003	21:17:00	21.91	0.72	8.35	95.3	0.18	7.49	-4.81

Appendix A
Station OR
In situ Water Quality Data
Coosa River Water Sampling Investigation
September/October 2003
Rome, Georgia

Date mm/dd/yy	Time hh:mm:ss	Temp C	SpCond uS/cm	DO mg/L	DO %	Depth ft	pH	Turbidity NTU
10/23/2003	10:16:59	17.75	88.29	8.16	85.7	5.14	7.87	12.46
10/23/2003	10:31:59	17.76	88.38	8.12	85.4	5.16	7.35	13.20
10/23/2003	10:46:59	17.77	88.34	8.08	85.0	5.22	7.27	15.09
10/23/2003	11:01:59	17.79	88.35	8.05	84.7	5.21	7.25	13.26
10/23/2003	11:16:59	17.81	88.39	8.04	84.6	5.26	7.24	12.83
10/23/2003	11:31:59	17.83	88.35	8.02	84.5	5.37	7.23	12.22
10/23/2003	11:46:59	17.83	88.44	8.01	84.3	5.12	7.23	14.36
10/23/2003	12:02:00	17.85	88.36	8.00	84.3	5.00	7.23	15.88
10/23/2003	12:16:59	17.85	88.47	8.01	84.3	5.25	7.23	14.05
10/23/2003	12:31:59	17.86	88.45	8.01	84.4	5.25	7.23	14.66
10/23/2003	12:46:59	17.88	88.48	8.01	84.4	5.26	7.23	13.44
10/23/2003	13:01:59	17.89	88.61	8.01	84.5	5.26	7.24	13.50
10/23/2003	13:16:59	17.92	88.69	8.02	84.6	5.26	7.24	16.13
10/23/2003	13:31:59	17.93	88.80	8.03	84.7	5.32	7.24	13.75
10/23/2003	13:46:59	17.96	88.89	8.04	84.9	5.31	7.24	15.03
10/23/2003	14:01:59	17.96	89.11	8.05	85.0	5.12	7.25	15.64
10/23/2003	14:17:00	17.98	89.27	8.05	85.0	5.25	7.25	15.76
10/23/2003	14:31:59	17.97	89.44	8.06	85.1	5.31	7.25	18.93
10/23/2003	14:46:59	17.98	89.65	8.07	85.2	5.28	7.26	16.92
10/23/2003	15:01:59	17.98	89.80	8.08	85.3	5.26	7.25	15.82
10/23/2003	15:17:00	18.01	89.94	8.09	85.4	5.26	7.26	16.06
10/23/2003	15:31:59	18.01	90.24	8.10	85.6	5.22	7.26	18.69
10/23/2003	15:46:59	18.03	90.43	8.11	85.7	5.24	7.26	17.77
10/23/2003	16:01:59	18.04	90.66	8.12	85.9	5.20	7.27	17.10
10/23/2003	16:16:59	18.06	90.89	8.13	86.0	5.33	7.27	17.16
10/23/2003	16:31:59	18.08	91.12	8.15	86.2	5.12	7.27	17.35
10/23/2003	16:46:59	18.09	91.24	8.15	86.2	5.11	7.28	17.71
10/23/2003	17:01:59	18.10	91.56	8.16	86.4	5.13	7.28	16.43
10/23/2003	17:16:59	18.10	91.75	8.17	86.5	5.27	7.28	18.14
10/23/2003	17:32:00	18.11	91.84	8.18	86.6	5.25	7.28	18.02
10/23/2003	17:46:59	18.12	92.13	8.19	86.7	5.25	7.29	18.26
10/23/2003	18:01:59	18.12	92.21	8.18	86.7	5.22	7.29	17.53
10/23/2003	18:16:59	18.12	92.35	8.18	86.7	5.17	7.29	18.44
10/23/2003	18:31:59	18.12	92.46	8.19	86.7	5.34	7.29	17.53
10/23/2003	18:46:59	18.12	92.59	8.18	86.7	5.23	7.29	18.38
10/23/2003	19:01:59	18.11	92.66	8.18	86.6	5.26	7.29	18.93
10/23/2003	19:16:59	18.10	92.69	8.18	86.6	5.16	7.29	21.37
10/23/2003	19:31:59	18.10	92.91	8.18	86.5	5.25	7.29	17.53
10/23/2003	19:47:00	18.10	93.14	8.17	86.5	5.24	7.29	18.20
10/23/2003	20:01:59	18.09	93.15	8.17	86.4	5.37	7.29	18.75
10/23/2003	20:16:59	18.09	93.26	8.16	86.4	5.25	7.29	18.63
10/23/2003	20:31:59	18.08	93.07	8.16	86.4	5.23	7.29	18.99

Appendix A
Station OR
In situ Water Quality Data
Coosa River Water Sampling Investigation
September/October 2003
Rome, Georgia

Date	Time	Temp	SpCond	DO	DO	Depth	pH	Turbidity
mm/dd/yy	hh:mm:ss	C	uS/cm	mg/L	%	ft		NTU
10/23/2003	20:47:00	18.07	93.27	8.15	86.3	5.25	7.28	19.60
10/23/2003	21:01:59	18.05	93.25	8.15	86.2	5.24	7.28	20.64
10/23/2003	21:16:59	18.04	93.07	8.14	86.1	5.21	7.28	20.21

Appendix A
Station CR
In situ Water Quality Data
Coosa River Water Sampling Investigation
September/October 2003
Rome Georgia

Date mm/dd/yy	Time hh:mm:ss	Temp C	SpCond uS/cm	DO mg/L	DO %	Depth ft	pH	Turbidity NTU
10/24/2003	9:16:59	18.50	99.17	7.9	84.3	4.32	7.33	21.01
10/24/2003	9:31:59	18.49	96.92	7.86	83.9	4.44	7.20	22.17
10/24/2003	9:46:59	18.47	94.31	7.83	83.5	4.57	7.16	20.21
10/24/2003	10:02:00	18.45	91.68	7.78	83.0	4.25	7.12	18.81
10/24/2003	10:16:59	18.51	89.49	7.74	82.6	4.42	7.10	19.42
10/24/2003	10:31:59	18.53	87.64	7.71	82.3	4.41	7.08	18.32
10/24/2003	10:46:59	18.55	85.80	7.69	82.2	4.58	7.08	18.63
10/24/2003	11:01:59	18.61	84.37	7.67	82.0	4.49	7.06	16.92
10/24/2003	11:16:59	18.58	83.35	7.67	82.0	4.55	7.05	17.96
10/24/2003	11:31:59	18.63	82.45	7.66	82.0	4.43	7.05	15.82
10/24/2003	11:46:59	18.64	81.80	7.63	81.6	4.54	7.05	16.13
10/24/2003	12:02:00	18.55	82.01	7.7	82.3	4.55	7.05	16.00
10/24/2003	12:16:59	18.64	81.30	7.68	82.2	4.4	7.05	15.09
10/24/2003	12:31:59	18.64	81.24	7.71	82.5	4.39	7.06	13.50
10/24/2003	12:46:59	18.68	80.98	7.72	82.6	4.48	7.06	13.81
10/24/2003	13:01:59	18.68	81.09	7.74	82.9	4.47	7.06	14.05
10/24/2003	13:16:59	18.73	80.93	7.75	83.1	4.35	7.06	12.65
10/24/2003	13:31:59	18.72	81.35	7.77	83.3	4.47	7.07	15.76
10/24/2003	13:46:59	18.64	82.26	7.83	83.8	4.54	7.08	12.22
10/24/2003	14:01:59	18.74	81.96	7.82	83.9	4.5	7.08	12.59
10/24/2003	14:17:00	18.75	82.09	7.85	84.2	4.36	7.07	11.73
10/24/2003	14:31:59	18.78	82.29	7.86	84.4	4.58	7.08	13.44
10/24/2003	14:47:00	18.89	81.73	7.85	84.5	4.55	7.09	19.24
10/24/2003	15:01:59	18.87	82.30	7.88	84.8	4.58	7.10	12.77
10/24/2003	15:16:59	18.82	82.95	7.92	85.1	4.46	7.10	12.71
10/24/2003	15:31:59	18.97	82.26	7.92	85.3	4.54	7.13	10.57
10/24/2003	15:46:59	18.88	83.04	7.96	85.6	4.65	7.14	12.40
10/24/2003	16:01:59	18.86	83.47	7.97	85.7	4.6	7.14	11.24
10/24/2003	16:16:59	18.90	83.44	7.97	85.8	4.27	7.15	13.56
10/24/2003	16:31:59	18.73	84.78	8.03	86.1	4.19	7.16	12.10
10/24/2003	16:46:59	18.79	84.66	8.03	86.2	4.15	7.16	10.82
10/24/2003	17:02:00	18.89	84.11	8.03	86.3	4.33	7.17	13.20
10/24/2003	17:16:59	18.85	84.50	8.04	86.5	4.31	7.17	11.73
10/24/2003	17:31:59	18.76	85.17	8.07	86.6	4.25	7.18	11.24
10/24/2003	17:46:59	18.81	84.97	8.08	86.8	4.21	7.19	11.73
10/24/2003	18:01:59	18.70	85.73	8.11	86.9	4.47	7.19	11.36
10/24/2003	18:16:59	18.72	85.66	8.11	87.0	4.34	7.19	11.49
10/24/2003	18:31:59	18.70	86.06	8.13	87.1	4.31	7.20	11.06
10/24/2003	18:46:59	18.73	85.97	8.11	87.0	4.15	7.20	10.57
10/24/2003	19:01:59	18.71	86.26	8.13	87.2	4.38	7.21	11.18
10/24/2003	19:17:00	18.65	86.78	8.15	87.2	4.37	7.21	10.27
10/24/2003	19:31:59	18.59	87.26	8.16	87.2	4.37	7.21	10.45

Appendix A
Station CR
In situ Water Quality Data
Coosa River Water Sampling Investigation
September/October 2003
Rome Georgia

Date mm/dd/yy	Time hh:mm:ss	Temp C	SpCond uS/cm	DO mg/L	DO %	Depth ft	pH	Turbidity NTU
10/24/2003	19:46:59	18.62	87.34	8.16	87.3	4.36	7.22	11.18
10/24/2003	20:01:59	18.54	87.93	8.16	87.2	4.41	7.22	12.34
10/24/2003	20:17:00	18.67	87.65	8.16	87.4	4.33	7.22	10.08
10/24/2003	20:31:59	18.61	88.14	8.17	87.4	4.37	7.22	10.14
10/24/2003	20:46:59	18.55	88.70	8.17	87.3	4.39	7.23	10.51
10/24/2003	21:01:59	18.58	88.84	8.16	87.3	4.4	7.23	10.82
10/24/2003	21:16:59	18.50	89.56	8.17	87.2	4.38	7.23	10.14

APPENDIX B
PCB CONGENER, HOMOLOGUE AND AROCLOR RESULTS

the hi vol technique allows for the reaching of lower detection limits. Could get the same detect limit of tough ctn 1000 liters of a grab sample + did the filtering in the lab.

0.45 micron - standard filter

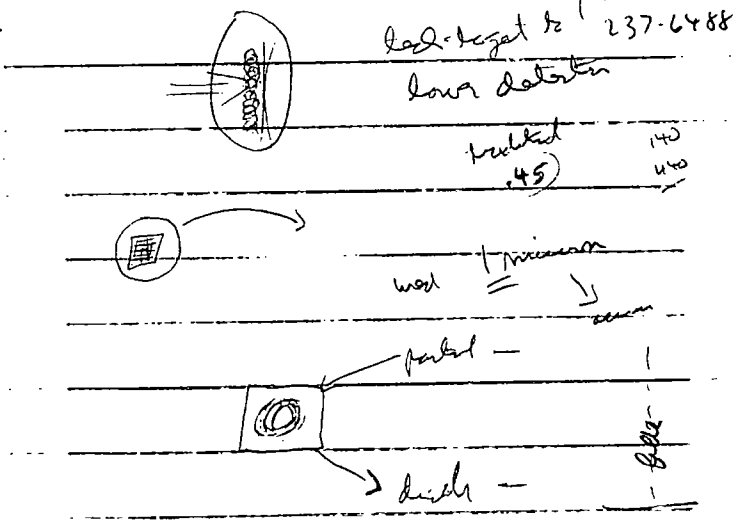
hi vol 1 micron

filter

2 micron - called

standard mass report. - 10 ng/L ppb

high results mass report -



- high vol mass spec - could go lower.

standard - 10 micron/gram

etc

ITS - need filter size